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Investigation into the emerging problem of elevated erucic acid content in double-low oilseed rape crops in the UK

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Levels of erucic acid (EA) above the EU commercial standard of 5% have been detected in UK crops of double-low rapeseed, resulting in price penalties and rejected loads. Although this has been limited to around 1.5% of loads nationally, in recent seasons, there are concerns that the introduction of the new 2% erucic acid standard may be difficult to achieve for some growers. The problem has come to light with the introduction of advanced near infrared spectrophotometers (NIRS), allowing routine rapid testing at the point of intake. A project funded by the AHDB has investigated the accuracy of NIRS rapid tests for erucic acid and possible sources of contamination.

Using a set of 50 harvest samples, giving GC EA levels of <0.1-37.8%, a very good level of correlation was found between GC and the FOSS DA1650 NIRS values over the full 0-37.8% EA range but a degree of error in the 0-5% range that would result in some 'false' failure results. Elevated EA levels were most prevalent in crops grown from farm saved seed. In the sample set, no significant contribution from EA in weed seed was found, but this source of contamination, in crops badly infested with brassica weeds, remains a threat. In a subset of 12 samples, testing 50 single seeds/sample revealed a range of elevated values of from 10% to over 50% erucic acid, clearly indicating the presence and influence of high erucic volunteers over multiple rotations. The intermediate levels of elevation conformed well with our understanding of the genetics of EA inheritance. These single seed tests showed that the low EA state, itself, was very stable. In a separate element of the study, DNA analysis, to detect the presence of the FAE1.2 allele, in volunteer plants, was used to predict EA contamination levels in five commercial crops. This was partially successful but further work is needed to account for additional regulatory loci.

The project has concluded that volunteers, with high and intermediate erucic acid status, growing in commercial crops, are the principle cause of contamination and this is exacerbated by the common practice of farm-saving seed.